

just forming; *k*, outer wall of last-formed cell exhibiting bud in second stage of development; *l*, lining membrane of ditto; *m*, bud as it appears at first.

Fig. 6. Terminal cell exhibiting bud in third stage of development: *a*, outer wall of cell; *b*, lining membrane; *c*, bud; *d*, tentacular sheath; *e*, polype-retractors just making their appearance.

Fig. 7. Enlarged view of a portion of the polype of *P. procumbens* exhibiting reproductive system: *a*, œsophagus; *b*, stomach; *c*, intestine; *d*, supposed ovary with the egg, *e*, attached; *f*, membranous envelope of the egg; *g*, lower filament supposed to be connected with the reproductive system.

PLATE V.

Fig. 1. Polypidom of *Paludicella procumbens* slightly enlarged.

Fig. 2. A portion of ditto much enlarged, exhibiting two or three series of cells.

Fig. 3. A patch of *Plumatella Allmani* magnified two times, comprising several polypidoms.

Fig. 4. Two or three polypidoms of ditto more highly magnified, exhibiting the polypes exerted and the envelope of the originating egg *a a*.

Fig. 5. A single cell of same still more highly magnified: *a*, keel or ridge on the upper surface of cell.

Fig. 6. *Plumatella punctata* five or six times magnified, exhibiting polypes exerted: *a*, envelope of originating egg.

Fig. 7. Three cells of ditto more highly magnified and more produced than usual, with the polypes exerted.

XIX.—*Contributions to the Botany of South America.*

By JOHN MIERS, Esq., F.R.S., F.L.S.

[Continued from p. 35.]

BROWALLIA.

THE affinity of *Browallia* with *Salpiglossis* is sufficiently evident, but in many respects it approaches very closely to *Petunia*. In the tabular arrangement suggested on a former occasion (*huj. op. iii. p. 172*), *Browallia* was associated with the *Salpiglossideæ*, on account of the apparent æstivation of its corolla, combined with its other characters. I regret very much, that since my attention has been directed to this investigation, I have had no opportunity of examining a flower in its living state, as by this means only could its precise mode of præfloration be ascertained: it is certainly not imbricative as in *Franciscea*, but is either replicative or reciprocative, as in *Petunia* or *Salpiglossis*; judging from its appearance after being pressed and dried, it seems to be rather that of the last-named genus. The following generic features have been derived wholly from an examination of dried specimens:—

BROWALLIA, Linn. (char. reform.).—*Calyx* tubulosus, subcylindricus, 10-nervis, 5-dentatus, dentibus inæqualibus, 3-nerviis,

augescens et persistens. *Corolla* hypocraterimorpha, tubo angusto, cylindrico, calyce 2-3-plo longiore, superne et antice ventricosus, fauce in oram elevatam constricto, limbo obliquo, plano, breviter 5-partito, lobis rotundatis, emarginatis, inæqualibus, rarius oblongis, acutis, antico paulo majore, æstivatione reciprocativa? *Stamina* 4, didynama, inclusa; *filamenta* brevissima, 2 antica inferiora, sublongiora, hemicyclice curvata, imo dilatata, apice expansa, inflexa et pilosa; *antheræ* sagittato-bilobæ, inversæ, lobis ovatis, rima marginali dehiscentibus, superiorum lobo altero minimo casso. *Ovarium* obovatum, apice pilosum, inferne glaberrimum, sæpe stipitatum, rarius omnino glabrum, 2-loculare, placentis carnosus prominulis dissepimento utrinque adnatis, multi-ovulatis. *Stylus* simplex, apice incrassatus, inflexus, transversim rugulosus. *Stigma* dilatato-bilobum, lobis emarginatis altero majore, intus septis cruciatim in locellis 4 stigmatosis divisum. *Capsula* membranacea, calyce persistente tecta, 2-locularis, 2-valvis, valvis bifidis, dissepimento tenuissimo demum libero parallelis. *Semina* plurima, minuta, obovata, lateribus angulata, dorso convexa, ventre concava et infra medium hilo notata; testa reticulato-foveolata. *Embryo* in axi albuminis carnosus homotrope subincurvus, cotyledonibus ovatis, compressis, radícula tereti infera 3-plo brevioribus et 2-plo latioribus.—*Herbæ Americae intertropicæ indigenæ, plus minusve viscido-pubescentes. Folia alterna, integra. Flores ad axillas foliorum superiorum solitarii, cum petiolis sublateralibus, interdum foliorum minutione in cymas irregulares terminalibus dispositi; pedunculo florifero brevi, interdum fructifero mox elongato; corolla violacea, cærulescens, aut albescens.*

In addition to the species enumerated by Mr. Benthams in DC. Prodr. x. 197 et 590, and the *B. speciosa* of Sir Wm. Hooker, Bot. Mag. tab. 4339, I have now to mention two others yet undescribed:—

Browallia tenella (n. sp.);—herbacea, humilis, parce puberula, foliis membranaceis, lanceolatis, vel ellipticis, in petiolum elongatum cuneatis; floribus paucis, solitariis, axillaribus, calycis membranacei dentibus lanceolatis, obtusis, inæqualibus; corollæ tubo gracili, calyce 4-plo longiore, limbo brevi, plano, sinuato-pentangulato, lobis brevissimis, emarginatis, rotundatis, antico majori; ovario apice piloso.—Rio de Janeiro.

This species, which I found growing at Pertinuinguy in 1830, has very much the habit of *B. demissa*, but is readily distinguished by the much greater length of the petiole, fewer flowers, a more slender corolla with a much narrower border, a more membranaceous calyx with less prominent nervures, and by the simple hairs and almost obsolete pubescence of the whole plant.

It is remarkable as being the first instance of any species growing so far to the southward of the equator and upon the eastern side of the continent. It is scarcely more than 6 or 8 inches high, with a very slender and almost glabrous stem, but little branched; its leaves are $1\frac{1}{4}$ inch long, $\frac{3}{4}$ inch wide, upon a very slender filiform petiole of $\frac{3}{4}$ inch; the peduncle of the flower is barely 2 lines long, growing to a length of 7 lines; the tube of the calyx is 2 lines long, with teeth scarcely a line in length; it is cylindrical, $\frac{3}{4}$ line in diameter, growing to a length of 4 lines in fruit and a diameter of 2 lines, wholly enclosing the capsule; the tube of the corolla is very slender, 8 lines in length, of a greenish lurid white; the border is 4 lines in diameter, at first of a pale bluish colour, afterwards becoming of a violet hue. The internal structure of the flower, capsule and seeds entirely agrees with that of the typical species*.

Browallia nervosa, n. sp. —foliis ellipticis, acutis, in petiolum longiusculum canaliculatum attenuatis, ciliatis, utrinque sparsim scabrido-pilosulis, penninerviis, nervis subtus prominulis, floriferis fere bracteiformibus; floribus axillaribus laxe subracemosis; calyce parvulo, angustato, cylindrico, dentibus acutis, erectis, ciliatis, nervis 10 violaceis picto, glabro; corolla hypocraterimorpha, tubo angusto, calyce 2-plo longiore, limbo lato, plano, violaceo, lobis brevibus emarginatis; ovario ovato, apice piloso.—Ecuador, v. s. in herb. Hooker. (Villa Sararanga, prope Loxam). Seemann, no. 740.

This plant is intermediate with *B. peduncularis* and *B. grandiflora*, from both of which it is evidently distinguished by the remarkably contracted form of its calyx and peduncle. It differs also from *B. demissa* by its leaves being more acute at their base, with a comparatively longer and more winged petiole, and by its more racemose flowers. The leaves are $1\frac{1}{4}$ inch long, 8 lines broad, on a petiole half an inch in length, with the coriaceous texture and general appearance of those of *B. peduncularis*. The calyx, having five short pointed erect teeth, is at first extremely narrow, 4 lines long, $\frac{3}{4}$ line in diameter, swelling to a much larger size in fruit; the tube of the corolla is 8 lines long, $\frac{1}{2}$ line in diameter, slightly swollen below the very narrow mouth; the border is large in proportion, quite plane and rotate, 9 lines in diameter, and of a purple colour; the capsule, 3 or 4 lines long, is hairy at the summit of its bifid valves.

It appears desirable to divide the species of *Browallia* into two sections; the first including those whose corolla presents a plane border, with short emarginate lobes, and an ovarium with its

* A figure of this species with generic details will be shown in plate 54 of the 'Illustr. South Amer. Plants.'

upper moiety densely covered with long white hairs, which are even persistent on the capsule; the second will comprise such as do not possess these characters, and is confined at present to a single species: thus—

§ 1. *EUBROWALLIA*. Corollæ limbus planus, rotatus, lobis brevibus, emarginatis; ovarium cuneatum, apice obtusum, et dense pilosum.

1. *Browallia demissa*, Linn., DC. Prodr. x. 197.
2. ——— *viscosa*, H. B. K. ii. 373.
3. ——— *tenella*, n. sp. supra descript.
4. ——— *nervosa*, n. sp. ibid.
5. ——— *peduncularis*, Bth., DC. Prodr. x. 197.
6. ——— *grandiflora*, Grah. ibid.
7. ——— *abbreviata*, Bth. ibid.

§ 2. *LEIOGYNE*. Corollæ limbus profunde incisus, laciniis oblongis, acuminatis, 3-nerviis; ovarium subglobosum, sessile, omnino glaberrimum.

8. *Browallia speciosa*, Hook. Bot. Mag. tab. 4339. The much larger flowers of this species, its more acutely-lobed and deeper-cleft border, and constantly smooth ovarium, are characters of hardly sufficient importance to constitute a generic difference; but at all events, with such marked distinctions, *Leiogyne* will form a good subgenus.

From the above enumeration *B. Jamesoni* has been excluded, because it differs in its characters, in the number of divisions of its calyx, in the shape of its corolla, the form and position of its stamens, and the structure of its stigma.

STREPTOSOLEN.

I have already alluded to the propriety of excluding from *Browallia* the species described under the name of *B. Jamesoni*, as it possesses many essential characters at variance with that genus. All the species of *Browallia* are herbaceous, while the plant above-mentioned is suffruticose, forming a branching shrub 4 or 6 feet high, with very rugous, coriaceous and scabrid leaves; the inflorescence is also more corymbose, and the structure of the flower differs from that of *Browallia* in the following particulars. The calycine tube is crowned with four, rarely with five teeth; the corolla is not hypocrateriform, and its tube, instead of being slender and cylindrical, swells into a funnel-shape, immediately as it emerges from the calyx, and the contracted basal portion soon twists half a revolution, so that the border becomes actually resupinate; owing to the want of the contraction in the throat, the border does not assume the figure of a rotate 5-lobed

plane, but enlarges more in a campanular form with five short rounded lobes, the front lobe being broadest; it is however often 4-lobed by the confluence of the two upper smaller segments; the two lower stamens are not short, dilated, hemicyclical, and fixed in a ventricose swelling below the throat, but are here straight, slender and filiform, originating in the contracted base of the funnel-shaped tube and opposite the broader lobe of the border; the two upper filaments are also straight and nearly erect, although they are fixed in the mouth of the campanulate border, with one of the lobes of each anther almost abortive or dwarfish, as in *Browallia*; all the filaments are terete, not greatly dilated, and although at first hairy, they become at last quite glabrous. The style resembles that of *Browallia* in being swollen at its summit, where it is hollow and corrugated into numerous transverse folds; but the stigma is of an essentially different form, being suddenly expanded into two broad, compressed, auriculate, equal lobes, at first connivent, afterwards ringent, with a large opening in the sinus into the tubular summit of the style (and which in the living state is probably filled with mucous matter), thus approaching more to the form of the stigma of *Petunia*. The whole plant possesses much the habit of *Stemodia suffruticosa*, with which genus and with *Pterostigma* there exists some analogy in the form of the stamens and stigma. It will however constitute a genus belonging to the tribe *Petunieæ*, connecting this group still more closely with the *Salpiglossideæ* by *Browallia*. The name now proposed for this genus is derived from στρεπτός, *tortus*, σωλήν, *tubus*, because of the torsion of the lower portion of the tube of the corolla.

STREPTOSOLEN (gen. nov.).—*Calyx* tubulosus, 4-5-nervis, reticulatus, 4-5-dentatus, dentibus inæqualibus, persistens. *Corolla* infundibuliformi-tubulosa, subcurvula, limbo campanulato, subobliquo, brevissime 5-lobo, lobis apiculatis aut emarginatis, antico paulo latiore, tubi torsione mox resupinato, æstivatione replicativa. *Stamina* 4, didynama, inclusa, valde inæqualia, 2 inferiora (in alabastris antica) imo tubi orta, 2 superiora brevissima fauce inserta; *filamenta* teretia, recta, pilosa, mox glabra; *antheræ* 2-lobæ, subdeclinatæ, lobis ovatis, imo late divaricatis, margine dehiscentibus, singulo receptaculo pollinifero globoso intus instructo, superiorum lobo altero minimo casso. *Ovarium* ovatum, disco glanduloso stipitato imo cinctum, apice parce pilosum, demum glabrum, 2-loculare, placentis carnosis dissepimento adnatis, multiovulatis. *Stylus* filiformis, apice incrassatus, subincurvus, tubulosus, et transverse rugoso-crenulatus. *Stigma* valde dilatatum, imo late cordatum, 2-labiatum, lobis æqualibus obtusis conniventibus,

mox hiantibus, in sinu cavernosum. *Capsula* ovata, coriacea, calyce tecta, 2-locularis, 2-valvis, valvis 2-fidis, dissepimento libero parallelis. *Semina* plurima *Browallia*.—Suffrutices *Nova-Granadenses et Ecuadorenses strigoso-hispidula*. Folia ovata, coriacea, rugosa, aspera, petiolata, florifera ad bracteas redacta. Flores pedunculati, terminales, conferti, subcorymbosi. Corolla aurantiaca, extus valde pubescens.

1. *Streptosolen Jamesoni*. *Browallia Jamesoni*, Benth., DC. *Prodr.* x. 197;—fusco- et scabrido-hispidula, foliis ovatis, utrinque acutis, subcoriaceis, bullato-rugosis, subtus nervis valde prominulis, utrinque scabridis, longiuscule petiolatis, corymbo ampliore, calycis dentibus 4 subæqualibus, acutis, erectis, fusco-viridibus, tubo cylindrico, angustato, medio contracto, concolori: corollæ aurantiacæ tubo infundibuliformi ampliore extus molliter tomentoso, limbi campanulati lobis fere æqualibus, brevissimis, mucronulatis.—Ecuador, *v. s. in herb. Hook.* Loxa, *Hartweg*, no. 818. Sasaranga, prope Loxam, *Seemann*, no. 872.

I have already described in the foregoing page the peculiar habit of this species; the leaves are $1\frac{1}{4}$ inch long, 8 lines broad, on a narrow channeled petiole of 4 lines; above they are deeply furrowed at the nervures with prominent reticulate veins, hispidly pubescent below, scabrido-hispid above, of a very dark green colour, opaque and brittle when dried; the peduncles are 4 lines long; the calyx of equal length is $1\frac{1}{2}$ line in diameter, somewhat contracted in the middle, with almost lanceolate acute erect teeth; the corolla is 1 inch in length, the tube at base only a line in diameter, swelling to a diameter of 4 lines at the mouth, the border being about 8 lines in diameter; externally it is softly pubescent and almost smooth within. The lower pair of stamens have their origin somewhat fornicated, about 2 lines above the base of the tube, opposite the reflexed broader lobe of the border, are about 6 lines in length, quite smooth at base, minutely pubescent above; the upper shorter pair are inserted at 7 lines from the base and below the mouth of the tube, which is here slightly pubescent; they are all stiff and rigid, and want that peculiar arching expansion with long glandular hairs that forms so peculiar a character in *Browallia*. The style is about 7 lines in length, with a broadly expanded stigma, which is quite bilabiate and of a distinctly different form from that of the very remarkable stigma of *Browallia*. The pedicel and calyx do not sensibly enlarge in size; the capsule, which is wholly inclosed within the calyx, is quite smooth, but in other respects like that of *Browallia* and *Petunia**

* This species will be figured in plate 55 of the 'Ill. South Amer. Plants.' *Ann. & Mag. N. Hist.* Ser. 2. Vol. v.

2. *Streptosolen Benthami* (an nov. sp. vel præcedentis var. ?);—ramulis griseo-hirsutulis; foliis ovatis, minus rugosis, læte viridibus, nervis supra impressis, utrinque pilosulis, supra vix scabriusculis, breviter petiolatis; floribus subcymosis, pedicellis calyce vix longioribus; calyce subinflato, late tubuloso, ore valde obliquo, tubo pallide viridi, nervis fuscis lineato, dentibus 5, inæqualibus, ovatis, obtusis, cærulescentibus; corollæ limbi lobis brevibus, emarginatis, lobo antico (in alabastro postico) multo majori, subreflexo.—Nova Granada, v. s. in herb. Hook. (inter Mivir et Naranjas, altit. 7000 ped., Jameson).

I have seen only a single and very meagre specimen of this "small shrub," which has few flowers: the leaves are of the same shape but somewhat smaller than in the foregoing species, much smoother and of a lighter colour; the flower is about the size of that of *S. Jamesoni*; the calyx is however larger, wider, with much broader and more obtuse segments; it increases somewhat in fruit to a length of 6 lines and a diameter of nearly 3 lines, and conceals the capsule, which is about 3 lines long; it has four thick coriaceous valves, is seated upon its stipitate support, and encircled at base by the indivual remains of the corolla.

XX.—Notes on *Montacuta ferruginosa*. By JOSHUA ALDER.

[With a Plate.]

THE interesting little bivalve *Montacuta ferruginosa*, though pretty generally diffused round the British coasts, has seldom been observed in a living state, and no account of the animal has been published, if we except the very imperfect one furnished by myself to Professor E. Forbes for the 'History of British Mollusca.' This, though correct as far as it goes, is by no means a complete description, having been taken under very unfavourable circumstances. I was glad, therefore, to meet with another living example of this species, which seemed less shy in displaying itself than the former one. It was taken from the stomach of a haddock,—a very unpromising locality certainly for meeting with anything in a living state,—but the little creature on being placed in sea-water appeared quite lively, and not visibly the worse for the uncomfortable quarters from which it had been extracted. In a short time it protruded the mantle beyond the shell, extended its large foot, and began to crawl about. The mantle of this species is curious and interesting from its showing a new modification of that part, intermediate between the plain anterior siphonal fold of *Kellia rubra* and the more elaborate form of mantle in *Lepton squamosum*, and thus supplying the desired link to